

PATENT COOPERATION TREATY

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Rec'd PCT/PTO 13 MAY 2005

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 35 and Rule 70)

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| Applicant's or agent's file reference | FOR FURTHER ACTION | | See Notice of Transmission of International Preliminary Examination Report (Form PCT/IPEA/416) |
| International application No. PCT/FR 03/50'09 | International filing date (day/month/year) 29.10.2003 | Priority date (day/month/year) 13.11.2002 | |
| International Patent Classification (IPC) or national classification and IPC C01B21/04 | | | |
| Applicant N GHY | | | |

1. The present International Preliminary Examination Report, prepared by the International Preliminary Examining Authority, is hereby transmitted to the applicant in accordance with Article 36.

2. The REPORT consists of 5 sheets, including the present cover sheet.

It is accompanied by ANNEXES, i.e., pages of the specification, claims, or drawings that have been amended and which serve as a basis for the present report, or pages containing corrections authorized by the International Preliminary Examination Authority (see Rule 70.16 and Instruction 607 of the PCT Administrative Instructions)

These annexes include sheets.

3. The present report contains indications and the corresponding pages relating to the following items:

- I Basis of the opinion
- II Priority
- III Non-formulation of opinion with regard to novelty, inventive step and industrial applicability
- IV Lack of unity of the invention
- V Reasoned statement under Article 35(2) with regard to novelty, inventive step and industrial applicability; citations and explanations in support of this statement
- VI Certain documents cited
- VII Irregularities in the international application
- VIII Observations on the international application

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| Date of submission of the Request for International Preliminary Examination 13.09.2004 | Date of completion of the present report 16.02.2005 |
| Name and mailing address of the International Preliminary Examination Authority European Patent Office – P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk – Netherlands Tel +31 70 340-2040 Tx: 31 651 epo nl Fax: +31 70 340-3016 | Authorized officer Van der Poel, W. Tel +31 70 340-3760 |

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International Application No.

PCT/FR 03/50109

I. Basis of the report

1. With regard to the **elements** of the international application (*the replacement pages that have been submitted to the receiving office in response to an invitation made in accordance with Article 14 are considered, in the present report, to be as "originally filed" and are not annexed to the report since they do not contain any amendments (Rules 70.16 and 70.17)*):

Specification, Pages

1-31 as originally filed

Claims, No.

1-21 as originally filed

Drawings, Pages

1/11-11/11 as originally filed

2. With regard to **language**, all of the elements indicated above were made available to the Authority or submitted to it in the language in which the international application was filed, unless indicated otherwise in this section.

These elements were made available to the Authority or were submitted to it in the following language:
which is:

- the language of a translation submitted for purposes of the International Search (Rule 23.1(b)).
- the language of publication of the international application (Rule 48.3(b)).
- the language of the translation submitted for purposes of the International Preliminary Examination (Rule 55.2 or 55.3).

3. With regard to the **nucleotide or amino acid sequences** disclosed in the international application (if applicable), the International Preliminary Examination was performed on the basis of the listing of the sequences:

- contained in the international application, in written form.
- filed with the international application, in computer-readable form.
- subsequently submitted to the Authority, in written form.
- subsequently submitted to the Authority, in computer-readable form.
- A declaration, to the effect that the listing of the sequences in written form presented subsequently does not go beyond the disclosure made in the application as filed, has been submitted.
- A declaration, to the effect that the information recorded in computer-readable form is identical to the listings of the sequences presented in writing, has been submitted.

4. The amendments have resulted in the cancellation of:

- the specification, pages:
- the claims nos:
- the drawings pages:

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT**

International Application No.

PCT/FR 03/50109

5. The present report has been prepared excluding (certain) amendments, which are considered to go beyond the disclosure of the invention as filed, as indicated below (Rule 70.2(c)):

(Any replacement page that includes amendments of this nature must be indicated in point 1 and annexed to the present report.)

6. Additional observations, if applicable:

V. Reasoned statement in accordance with Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations in support of this statement

1. Declaration

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|--------------------------|------|-------------|
| Novelty | Yes: | Claims 1-21 |
| | No: | Claims |
| Inventive step | Yes: | Claims |
| | No: | Claims 1-21 |
| Industrial applicability | Yes: | Claims 1-21 |
| | No: | Claims |

2. Citations and explanations

see separate sheet

Regarding point V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations in support of this statement

Reference is made to the following document:

D1: WO-A-01/25141 (Ballard Power Systems)

1. The application does not fulfill the conditions set forth in PCT Article 6, claims 1 and 11 being unclear.

Claims 1 and 11 mention several results sought. For example, it is mentioned that there is high energy efficiency, that very low or zero levels of carbon dioxide and pollutants are released, that the hydrogen production yield is improved, and that the overall efficiency is improved. The claims do not define how to achieve these results.

2. The present application does not fulfill the conditions set forth in PCT Article 33(1), as the subject of claims 1 and 11 does not involve an inventive step as defined by PCT Article 33(3).

Document D1 discloses a method and a device for the autothermal reforming of a fuel. In this method, a portion of the hydrocarbons is oxidized by a flow of oxygen. The products of the oxidation with the unconverted hydrocarbons are reformed in a subsequent step. After the reforming step, the gasses are cooled by heat exchange with water and vapor. The reforming takes place at high pressures (see page 11, line 29 – page 19, line 8; Fig. 1).

For one skilled in the art it is clear that the high pressure mentioned in D1 (see page 11, line 31) is at least 30 bar.

Claim 1 mentions in parentheses that pure or nearly pure oxygen is used. It should be noted that text in parentheses cannot limit a claim. In any case, the use of pure oxygen will certainly be quite obvious to one skilled in the art.

The condensation of at least part of the water vapor is not described in D1, but since the cooling is very similar in D1, it may be assumed that at least part of the water vapor is also condensed in D1.

Claim 1 contains several results mentioned. Since the document describes the same reaction steps, the same results will be obtained.

The subject of claim 1 differs from Document D1 in that in claim 1, the hydrogen is extracted from the conversion products, whereas in Document D no such extraction of the hydrogen is described.

One skilled in the art will normally separate the hydrogen produced, for example to use it in a fuel cell. He knows many methods for performing such a separation, for example by adsorption, permeation, etc.

He will choose one or more of these methods without inventive activity. The subject of claim 1 does not imply any inventive activity.

The subject of claim 11 does not imply any inventive activity, either. This claim for the device lacks inventiveness for the same reasons mentioned above for claim 1.

3. The applicant's attention is also drawn to the other documents in the search report. These documents are also significant with respect to the inventive activity of the claims.
4. It is not clear how the subject of claims 2-10 and 12-21 can form the basis for an independent claim that is novel and involves an inventive step.

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PATENT COOPERATION TREATY

From: THE INTERNATIONAL PRELIMINARY
EXAMINING AUTHORITY

To:

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NOTICE OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

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| | | Mailing date (day/month/year) 16.02.2005 |
| Applicant's or agent's file reference B 10957 PCT | | IMPORTANT NOTICE |
| International application No. PCT/FR 03/50109 | International filing date (day/month/year) 29.10.2003 | Priority date (day/month/year) 13.11.2002 |
| Applicant N GHY | | |

1. The applicant is hereby notified that the International Preliminary Examining Authority has prepared the International Preliminary Examination Report for the international application and transmits it herewith, accompanied, if applicable, by annexes.
2. A copy of the present report and its annexes, as applicable, has been transmitted to the International Office for communication to all of the designated offices.
3. If required by any of the designated offices, the International Office will prepare an English translation of the report (with the exception of its annexes), and will transmit it to the offices in question.
4. **IMPORTANT NOTICE**

In order to begin the national phase at each designated office, the applicant must perform certain acts (filing translations and paying national fees) within 30 months from the priority date (or later for certain offices) (Article 39.1) (see also the reminder sent by the International Office on form PCT/IB/301).

When a translation of the international application must be submitted to a designated office, it must include a translation of any annexes to the International Preliminary Examination Report. It is the applicant's responsibility to prepare the translation and submit it directly to each designated office involved.

For further details on the applicable deadlines and the requirements of the designated offices, see Volume II of the PCT Applicant's Guide.

The applicant is hereby notified that Article 33(5) stipulates that the criteria for novelty, inventive step and industrial applicability as defined in Article 33(2) through (4) are merely for purposes of the International Preliminary Examination and that "any Contracting State may apply additional or different criteria for the purpose of deciding whether or not the invention is patentable in this State (see also Article 27(5)). Such additional criteria may, for example, relate to exceptions to patentability and to requirements for the sufficient disclosure of the invention, the clarity of the claims, and their basis in the specification."

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